



**INTERNATIONAL WORKSHOP
OCTOBER 20, 2018
KRASNOYARSK, RF**



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**ADVANCED TECHNOLOGIES IN
AEROSPACE, MECHANICAL &
AUTOMATION ENGINEERING:
MIST: AEROSPACE - 2018**

WORKSHOP PROGRAMME

**MODERN ISSUES
IN SCIENCE AND
TECHNOLOGY**

**INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC
AND RESEARCH CONFERENCE: SOCHI-2018**



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IOP Conference Series

WORKSHOP PROGRAMME

International Workshop «Advanced Technologies in Aerospace, Mechanical and Automation Engineering» - “MIST: Aerospace-2018”

(Krasnoyarsk, Russia, October 20, 2018)

within the framework of
**IX International Multidisciplinary
Scientific and Research Conference
"Modern Issues in Science and Technology"**

(Sochi, Russia, 2018)

Workshop website:

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**Krasnoyarsk
2018**

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JSC "ACADEMICIAN M.F. RESHETNEV
Information Satellite Systems"



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WORKSHOP SCHEDULE

October 19, 2018

Arrivals, registration

October 20, 2018

10.00 – 11.00 Registration

11.00-11.30 Workshop opening

11.30 – 14.00 Plenary Session

14.00 – 15.00 Lunch

15.00 – 20.00 Sections

October 21, 2018

Departures

SECTION 1. AEROSPACE TECHNOLOGIES

Advancing methodology to specify cavitation characteristic of screw-type centrifugal pumps	V Nazarov, A Zuev, L Nazarova M Savelyeva	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Analysis of logic-time characteristics of subsystem supply functioning hardware elements of unmanned aerial vehicles	N A Testoedov, I V Kovalev, M Fosner, A A Voroshilova, V V Losev	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Faculty of Logistics, Maribor University, Celje, Slovenia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Application of cascade-connected regulation in the implementation of the software of weight component compensation system	V I Kudymov, J O Badanina, I V Kovalev, V S Bashkarev M V Karaseva	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Automation system of communication satellite designing	N A Testoedov, A V Kuzovnikov, Yu G Vygonsky, D A Matronitsky, A V Ankudinov T V Strekaleva	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
High-speed stream data collection and processing system of the Earth's ionospheric sounding	Vladimir V. Kopytov, Andrey O. Shulgin, Nikita G. Demurchev, Pavel V. Kharechkin, Vladimir V. Naumenko	"Infocom-S", LLC, Stavropol, Russian Federation
Direction-finding method solution phase ambiguity in determining the spatial orientation of space vehicle	I N Kartsan, M O Petrosyan, S V Efremova, V V Khrapunova	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Development of electric heaters with increased efficiency of unpressurized designed space vehicles	N V Lukonin, I Y Shestakov, E N Golevenkin, M M Mikhnev, I A Maksimov S N Pankina	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia National Research University of Electronic Technology, Moscow, Zelenograd, Russia
Efficient engineering approach to communication satellite design	N A Testoedov, A Yu Vshivkov, V I Kosenko, A V Ankudinov, M V Saveleva, E V Tuev	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia

MIST: Aerospace-2018

Electrodynamic analysis of materials for the antenna elements	Alexandr Chabanenko, Elena Frolova, Victor Balashov Maria Smirnova	St. Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia Joint-stock company «Research and Production Enterprise «Radar mms», Saint Petersburg, Russia
Ensuring the quality of the materials used in the spacecraft engineering	V E Patraev, E A Shangina, V V Dvirny, A A Voroshilova, S A Borisov	JSC “Academician M F Reshetnev Information satellite systems”, Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Evaluation of visual characteristics of image perception in avionics	O O Zharinov, M O Kostishin, M A Trushkin V V Markelov	Department of Problem-Oriented Computing Complexes, Saint Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia Department of Computer Design of On-Board Computer Equipment, Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint Petersburg, Russia Research Center, Stock Company «Experimental Design Bureau «Elektroavtomatika» named after P A Yefimov, Saint Petersburg, Russia
Experimental research of the drawing process with forced thinning of thick billet for the formation of parts with specified wall thickness	S Yu Zvonov, A G Shlyapugin A A Halikova	Samara National Research University, Samara, Russia
Fast satellite imagery of lengthy territories with complex configuration	D K Mozgovoy, D N Svinarenko, R Yu Tsarev, T N Yamskikh	Oles Honchar Dnipropetrovsk National University, Dnipropetrovsk, Ukraine Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Focused antennas for diagnostics of spacecraft antenna systems	D A Veden’kin, J E Sedel’nikov, N A Testoedov, I J Danilov, A G Romanov, V I Kudymov	JSC “Academician M F Reshetnev Information satellite systems”, Zheleznogorsk, Krasnoyarsk region, Russia Kazan National Research Technical University, Kazan, Russia
Choice of optimal multiversion software for a small satellite ground-based control and command complex	I N Kartsan, S V Efremova, V V Khrapunova, M I Tolstopiatov	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Investigation of the automation level of designing the software and hardware structure of the on-board equipment integrated modular avionics	A V Khakimov, V A Nechaev M O Kostishin	Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint Petersburg, Russia
Investigation of the surface relief of polyalkaneimide composites after treatment with oxygen plasma	V I Pavlenko N I Cherkashina	Belgorod State Technological University named after V.G. Shoukhov, Belgorod, Russia

Laser reflection method for vegetation monitoring at eye-safe sensing wavelengths in the NIR spectral band	M L Belov, A M Belov, V A Gorodnichev S V Alkov	Bauman Moscow State Technical University (BMSTU), Moscow, Russia
Modelling of the welded seam parameters at electron-beam welding	Yu N Seregin, A V Murygin, V S Tynchenko A V Milov	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
On the efficiency of defocusing a large satellite multi-beam hybrid parabolic antenna	Yu I Choni, A G Romanov, I Yu Danilov, V V Mochalov, V A Bartenev, A O Shemyakov	JSC “Academician M F Reshetnev Information satellite systems”, Zheleznogorsk, Krasnoyarsk region, Russia Kazan National Research Technical University, Kazan, Russia Moscow Aviation Institute (National Research University)
On the peculiarities of wear-resistant nanocoatings research under production conditions. Obtaining calculated dependencies	N A Chemborisov, I K Ustinov O A Artemenko	Kaluga branch Bauman Moscow State Technical University, Kaluga, Russia
Prediction of the vibration state of the GTE turbine rotor taking into account the influence of the geometric accuracy of parts	M A Boltov, E J Kolchina, V A Pechenin N D Pronichev	Samara University, Samara, Russia
Optimization model of the hub airport schedule under uncertainty	E D Guzha, V A Romanenko M A Skorokhod	Korolev Samara National Research University, Russia
Optimization of automatic exclusion algorithm of the vector network analyser measuring equipment	D A Bolshakov, N N Burdukovskaya K V Shugurova	JSC “Academician M F Reshetnev Information satellite systems”, Zheleznogorsk, Krasnoyarsk region, Russia
Peculiarities of precision space platform design for navigation satellites	V E Kosenko, V D Zvonar, M A Ilin, V E Chebotarev, AA Frolov	JSC “Academician M F Reshetnev Information satellite systems”, Zheleznogorsk, Krasnoyarsk region, Russia
On the peculiarities of wear-resistant nanocoatings research under production conditions. Part 2. Experiment results	N A Chemborisov, I K Ustinov O A Artemenko	Kaluga branch Bauman Moscow State Technical University, Kaluga, Russia
Quality assurance of electrical components for spacecraft on-board equipment	V E Patraev, V E Chebotarev, E A Shangina, A A Voroshilova, R Yu Tsarev and T N Yamskikh	JSC “Academician M F Reshetnev Information satellite systems Siberian federal university Reshetnev Siberian State University of Science and Technology Krasnoyarsk Science and Technology City Hall

Satellite imagery of coastlines	D K Mozgovoy, D N Svinarenko, R Yu Tsarev, T N Yamskikh E V Burdina	Oles Honchar Dnipropetrovsk National University, Dnipropetrovsk, Ukraine Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Simulation of short-range navigation system based pseudolites and investigation of its accuracy characteristics	D D Dmitriev, A B Gladyshev, V N Ratuschnyak, I N Kartsan	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Solving navigation-temporal tasks in different coordinate systems	V E Chebotarev, V V Brezitskaya, I V Kovalev, I N Kartsan Yu N Malanina A O Shemyakov	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia Management Department, Irkutsk State Transport University, Irkutsk, Russia Moscow Aviation Institute
Spacecraft protection from the negative effects of environmental factors and complex dynamic loads at the transportation stage	E N Golovenkin, S N Lozovenko, A V Tsaitler, M V Karaseva, A A Melkomukov	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Substantiation of the need to create the technology of stretch forming shells double curvature shell using new alloys	V A Mikheyev, S V Surudin, D V Agafonova, A T Tiabashvili V O Agafonova	Samara National Research University, Samara, Russia,
The automated system of telemetry data multiline reception, processing and analysing	J V Vilkov, I A Maksimov, M V Nekrasov, R J Tsarev, T N Yamskikh, V V Kovalev	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
The development of the model of satellite orbital motion	A G Dubrovin, Yu N Baranov, A P Tryastsin	Academy of FGS of Russia, Orel State University, Orel, Russia
The electrodynamic modelling of netted linen	O Sh. Dautov, A G. Romanov, V A. Skachkov A K Shatrov E N Golovenkin	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Kazan National Research Technical University, Kazan, Russia
Variable neighbourhood search algorithm for K-means clustering	V I Orlov, L A Kazakovtsev, I P Rozhnov, N A Popov and V V Fedosov	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk State Agrarian University, Krasnoyarsk, Russia

Multilevel evaluation of quality interactive electronic technical manual quality for aviation technology	E A Frolova	Saint Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia
Method for identifying quality anomalies of the interactive electronic technical manuals for aircraft equipment operation and repair	E A Frolova, Ya A Ivakin, A O Smirnov	Saint Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia

SECTION 2. MECHANICAL ENGINEERING AND INDUSTRY

A description of the interface interaction model of specialized information and software of the distributed automated process control systems	I V Kovalev, V V Losev, M V Saramud, D I Kovalev G D Voskoboinik	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia Xingtai University, Xingtai, Hebei, China
A method of measuring the depth of the penetration channel during electron-beam welding	A A Druzhinina, V D Laptenok, A V Murygin V E Petrenko	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Alkali silicate protective coatings	L N Nazharova, G G Mingazova R S Saifullin	Kazan national research technical university, Kazan, Russia
Analysis and design of pressure sensors for micromechanical integrated pressure sensors	M E Kalinkina, A S Kozlov, R Y Labkovskaia, O I Pirozhnikova V L Tklich	Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint Petersburg, Russia
Analysis of the intellectual interaction of mechanical autonomous systems	A V Lekanov, I V Kovalev, F K Sin'kovsky, A D Leonenkov, M V Karaseva, S A Borisov	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Application of imitation modelling means to create digital twins of the Industry 4.0 company technological equipment	D A Zakoldaev, A V Gurjanov, D R Kochubey I O Zharinov	Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint Petersburg, Russia Stock Company «Experimental Design Bureau «Electroavtomatika» named after P A Yefimov, Saint Petersburg, Russia
Artificial aging of hard-alloy cutting tool with titanium diffusion coating as a way to increase its persistence	A G Sokolov, L I Svistun, R L Plomodyalo E E Boblylyov	Kuban State Technological University, Krasnodar, Russia

Automated process control quality improvement of technical systems electrochemical protection	Anatoly Yastrebov, Alexander Konovalov, Vladimir Sulaberidze, Victor Balashov	St. Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia Joint-stock company «Research and Production Enterprise «Radar mms», Saint Petersburg, Russia
Basic requirements and principles for the compensation system development	E N Golovenkin, A K Shatrov, J O Badanina, E I Badanin, I V Kovalev and M V Karaseva	JSC “Academician M F Reshetnev Information satellite systems”, Zheleznogorsk, Krasnoyarsk region, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Calculating the geometric parameters of the distribution of electron beam energy density on its section in EBW	A N Bocharov, A V Murygin, V D Laptенок	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Characterization of microrelief forming on the hardened steel surface with ultrasonic reinforcing burnishing processing	Sergey Grigoriev, Aleksandr Selivanov, Igor Bobrovskij, Aleksandr Dyakonov, Igor Deryabin	Moscow State Technological University Stankin, Moscow, Russian Federation Togliatti State University, Togliatti, Russian Federation Samara National Research University, Samara, Russian Federation South Ural State University, Chelyabinsk, Russian Federation Mechanical Engineering Research Institute of the RAS, Moscow, Russian Federation
Crystallization of aluminium alloys under pressure	V F Korostelev, M S Denisov	Vladimir State University named after Alexander and Nikolay Stoletovs, Vladimir, Russia
Dependent failure in multifunctional automatic control systems	A S Degtyarev, V I Usakov, P A Kuznetsov, I V Kovalev, M V Karaseva	JSC "Central Construction Bureau “Geofizika”, Krasnoyarsk, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Designing High-Speed CNC-Operations	A Kh Nurkenov, V I Guzeev, P G Mazein, I P Deryabin	South Ural State University, Chelyabinsk, Russia
Determination of installation sites for anti-adhesive devices on the bucket of an EK-18 excavator	S A Zenkov	Bratsk State University, Bratsk, Russia
Determination of reliability of working position with rigid inter-aggregate relation	Sergey Grigoriev, Boris Gorshkov, Nikolai Bobrovskij, Igor Bobrovskij and Natalya Samokhina	Moscow State Technological University Stankin, Moscow, Russian Federation Volga Region State University of Service, Togliatti, Russian Federation Togliatti State University, Togliatti, Russian Federation Samara Scientific Center of the Russian Academy of Sciences, Samara, Russian Federation

Device for measuring the electrical conductivity of a flame for the diagnosis of the combustion process in an ICE with spark ignition	Natalya Smolenskaya, Igor Bobrovskij, Victor Smolenskii, Nikolaj Bobrovskij Aleksey Lukyanov	Togliatti State University, Togliatti, Russian Federation Samara Scientific Center of the Russian Academy of Sciences, Samara, Russian Federation
Device for monitoring the temperature and diameter of an extended cylindrical object in the high-temperature manufacturing process	A Tomashuk	Igor Sikorsky Kyiv Polytechnic Institute, Kyiv, Ukraine
Diffusion saturation from fusible liquid metal media solutions by titanium of TK and WC-Co alloys as way to increase of tool durability	E E Bobylyov	Kuban State Technological University, Krasnodar, Russia
Engineering of the knife grinding machine milling process	Sergey Vikharev	Ural State Forest Engineering University, Ekaterinburg, Russia
Estimating Safety of a Tractor Cab with the Protective System ROPS	I.P. Troyanovskaya, S.I. Serov, E.I.Kromskij, D.V. Kozminykh	South Ural State University, Chelyabinsk, Russia South Ural State Agrarian University, Troitsk, Russia
Expansion of technological capabilities of the laboratory unit for determining the longitudinal stability of rods	E V Shirokikh, T D Dikova, O B Shirokikh, E A Smirnova, O A Pogodina	State University of Humanities and Social Studies, Kolomna, Russia
Experimental stand for the study of cavitation flow regimes	Vladimir A Kulagin, Alexander U Radzyuk, Elena B Istyagina Tatyana A Pinykh	Siberian Federal University, Krasnoyarsk, Russia
Features of the holes formation by counterboring tool	I P Deryabin V G Shalamov	South Ural State University, Chelyabinsk, Russia
Formation of a complex part surface at the micro level during milling	N A Chemborisov, I D Sokolova I K Ustinov	Kaluga branch Bauman Moscow State Technical University, Kaluga, Russia
Formation of the diffusion barrier at the interface of Cr20Ni80 alloy - Ni-Cr-Al coating	V G Shmorgun, A I Bogdanov, A O Taube L M Gurevich	Department of Materials Science and Composite Materials, Volgograd State Technical University, Volgograd Russia
Heat exchange numerical modelling while cooling a high-temperature metallic cylinder by water and air medium flow	S S Makarov M Y Alies	Udmurt Federal Research Center of the Ural Branch of the Russian Academy of Sciences, Izhevsk, Russia
Implementation of the design concept of a high-speed processing cycle for CNC machines in the form of a software module CAM-system	L V Shipulin A Kh Nurkenov P G Mazein	South Ural State University, Chelyabinsk, Russia

MIST: Aerospace-2018

Influence evaluation of the tow ship oscillation on the towed system motion	N N Kamaletdinov, A L Gusev E S Golovina	Kazan National Research Technical University named after A.N. Tupolev – KAI, Kazan, Republic of Tatarstan, Russian Federation
Influence of the electrolysis mode on corrosion resistance of metallic coatings	S. Yu. Kireev, Yu. P. Perelygin S. N. Kireeva	Penza State University, Penza, Russia
Influence of ultrasonic burnishing on the durability of the burnisher	Sergey Grigoriev, Aleksandr Selivanov, Nikolai Bobrovskij, Aleksandr Dyakonov Petr Mazein	Moscow State Technological University Stankin, Moscow, Russian Federation Togliatti State University, Togliatti, Russian Federation South Ural State University, Chelyabinsk, Russian Federation Mechanical Engineering Research Institute of the RAS, Moscow, Russian Federation
Laser-aided direct metal tooling of manufacturing aviation details on CNC machine	P Ogin, D Levashkin F Vasilyev	Togliatti State University, Togliatti, Russian Federation Moscow Aviation Institute (National Research University), Moscow, Russian Federation
Method of forming means for monitoring the process of electrochemical protection of pipeline systems	Alexander Konovalov, Artemy Varzhapetyan, Anatoly Yastrebov Victor Balashov	St. Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia Joint-stock company «Research and Production Enterprise «Radar mms»», Saint Petersburg, Russia
Methods of assessment of modernization of the tractor Belarus 922 to work on ethanol-containing fuel	Sergey Plotnikov, Yury Lanskih, Mikhail Smol'nikov	Vyatka State University, Kirov, Russia
Model for stationary turn of an arbitrary vehicle	I P Troyanovskaya S A Voinash	Department of Automobiles and Crawler Vehicles, South Ural State University, Chelyabinsk, Russia Department of Applied Mechanics, South Ural State Agrarian University, Troitsk, Russia Department of Land Transport Systems, Rubtsovsk Industrial Institute (Branch) of Polzunov Altai State Technical University, Rubtsovsk, Russia
Modelling of electron beam distribution in electron beam welding	Yu N Seregin, A V Murygin, V D Laptenok V S Tynchenko	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Modelling of milling processes in knife grinding machines	S N Vikharev J D Alashkevich	Ural State Forest Engineering University, Ekaterinburg, Russia Reshetnev Siberian state university of a science and technology, Krasnoyarsk, Russia
Non-Newtonian effects of a lubricant flow through a T-shaped microchannel	E R Kutuzova, A F Tazyukova, F Kh Tazyukov A G Kutuzov	Kazan National Research Technological University, Kazan, Russia
Optimization model controlling parameters of a roller drilling process based on energy criterion	A A Shigina, A O Shigin, A A Stupina, S M Antipina	Siberian Federal University, Krasnoyarsk, Russia

N N Dzhioeva		
Principles of construction of the technological system for the manufacture of construction polymer reinforcement	FA Urazbakhtin , Yu V Ganziy and M V Otrishko	Votkinsk branch of IzhSTU named after M.T. Kalashnikov, Votkinsk, Russia UdmFIC UrB RAS, Izhevsk, Russia Building Management - 33, Moscow, Russia
Resistance to brittle fracture and availability of austenitic steels	Boris Ermakov, Svetlana Vologzhanina, Igor Bobrovskij, Nikolai Bobrovskij Yaroslav Erisov	Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation Saint Petersburg National Research University of Information Technologies, Mechanics and Optics University ITMO, Saint Petersburg, Russian Federation Togliatti State University, Togliatti, Russian Federation Samara Scientific Center of the Russian Academy of Sciences, Samara, Russian Federation Samara National Research University, Samara, Russian Federation
Simulation of influence of cutting tool's construction on specific heat energy in processing of bevel gears	Nikita Kanatnikov, Nikolai Bobrovskij, Vladimir Tabakov, Petr Zibrov Oleg Drachev	Orel State University, Orel, Russian Federation Togliatti State University, Togliatti, Russian Federation Ulyanovsk State Technical University, Ulyanovsk, Russian Federation
Specific features of mobile machine reverse movement	A S Pavlyuk, V I Poddubniy A S Baranov	Altay State Technical University, Barnaul, Russia
Structure and thermophysical properties of polytetrafluoroethylene-aluminium composite materials produced by explosive pressing	N A Adamenko, A V Kazurov, D V Savin G V Agafonova	Volgograd State Technical University, Volgograd, Russia
Study of ZrN-AlN formation solid-phase reaction in a nitrogen atmosphere during microwave heating	R A Shishkin, V S Kudyakova, A V Chukin A R Beketov	Ural Federal University, Yekaterinburg, Russia
The integration of automatized systems and cyber and physical equipment of the Industry 4.0 item designing company	A V Gurjanov, D A Zakoldaev, A V Shukalov, I O Zharinov	Stock Company «Experimental Design Bureau «Electroavtomatika» named after P A Yefimov, Saint Petersburg, Russia Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint Petersburg, Russia
Wear Resistance of Composite Coatings Based on Iron Alloys	J.E. Kisel G.V. Guryanov	Bryansk State Engineering Technological University, Bryansk, Russian Federation
Welded pipe geometry changing during the expanding process	D B Frunkin, L M Gurevich, R E Novikov, A I Bannikov, A G Serov, N A Dyatlov	Volgograd State Technical University, Volgograd, Russia

Working position with recomposed production systems	Igor Bobrovskij, Boris Gorshkov, Maksim Odnoblyudov, Nikita Kanatnikov, Pavel Melnikov	Togliatti State University, Togliatti, Russian Federation Samara Scientific Center of the Russian Academy of Sciences, Samara, Russian Federation Volga Region State University of Service, Togliatti, Russian Federation St. Petersburg Polytechnic University, St. Petersburg, Russian Federation Orel State University, Orel, Russian Federation
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SECTION 3. CYBERNETICS, AUTOMATION AND INFORMATION TECHNOLOGIES

About algorithm of robust nonparametric estimation of regression function on observations	M A Denisov, E A Chzhan, A A Korneeva V V Kukartsev	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Activation of phase boundary and current-generating processes in plasma-electrochemical systems	V A Mamaeva, A K Chubenko, A I Mamaev, E Yu Beletskaya T A Baranova	National Research Tomsk State University, Tomsk, Russia
Analysis of spacecraft actuator mechanisms design process using tensor method	N A Testoedov, V I Usakov V A Levko, S Yu Piskorskaya and V A Bartenev	JSC "Central Construction Bureau "Geofizika", Krasnoyarsk, Russia JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology
Analytical approaches for analysis of intracardiac bipolar electrograms during atrial fibrillation	K S Mityagin, A P Zaretskiy, G A Gromyko A P Kuleshov	Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia Main Military Clinical Hospital named after N.N. Burdenko, Moscow, Russia National Medical Research Center for Transplantology and Artificial Organs named after V.I. Shumakov, Moscow, Russia
Application of the object model in the modelling process of locomotive drive units	D Ya Antipin, V I Vorobyev, S O Kopylov	Bryansk State Technical University, Bryansk, Russia
Automation of adjustment stages by high-performance semiconductor converters	M A Grigorev, A A. Gryzlov V S Katrichek	South Ural State University, Chelyabinsk, Russia
Developing the model of an automated rotary-cut veneer sorting system	B M Shifrin, I V Eliseev, V A Sokolova, N V Melamed S A Voinash	Saint Petersburg State Forest Technical University, Saint Petersburg, Russia Rubtsovsk Industrial Institute (Branch) of Polzunov Altai State Technical University, Rubtsovsk, Russia

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Genetic algorithms of physical modelling with postcrossover survival	A S Degtyarev, V I Usakov, P A Kuznetsov, I V Kovalev T S Karaseva	JSC "Central Construction Bureau "Geofizika", Krasnoyarsk, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Method of intellectualization for geospatial processes control systems	Yan Ivakin, Sergey Michurin, Vladimir Sulaberidze Valeriy Lipatnikov	St. Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia, Marshall of the Soviet Union S.M. Budenny Military academy of communication, Saint Petersburg, Russia
Non-smooth regularization in radial artificial neural networks	V N Krutikov, LA Kazakovtsev V L Kazakovtsev	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Reduction of the asymptotic complexity of the assignment problem	J V Vilkov, V A Bartenev, G M Rudakova, O V Korchevskaya E V Tueva	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Simulation for dynamics of transient ischemic attacks with thermal infrared imaging	K S Mityagin, A P Zaretskiy I B Prokhorov	Moscow Institute of Physics and Technology (State University), Moscow, Russia
Solution of the dynamics inverse problem with the copying control of an anthropomorphic manipulator based on the predictive estimate of the operator's hand movement using the updated Brown method	V I Petrenko, F B Tebueva, M M Gurchinsky, V O Antonov J A Shutova	North-Caucasus Federal University, Stavropol, Russia
The formalized approach of building a network controller for the information handling automated process control system of the technological control cycle	J V Vilkov, V A Bartenev, I V Kovalev, V V Losev M N Chuvashova	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
The implementation of measures for reduction an inertia of the interaction components of the heterogeneous environment for the automated process control system	A A Koltyshev, A K Shatrov, I V Kovalev, V V Losev M N Chuvashova	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
The method of forming a geometric solution of the inverse kinematics problem for chains	V I Petrenko, F B Tebueva, M M Gyrchinsky, V O Antonov J A Shutova	North-Caucasus Federal University, Stavropol, Russia

with kinematic pairs of rotational type only

The principles of the electric drive control of antennas and solar batteries rotation system for spacecraft based on a dual-fed switched reluctance drive	S A Bronov, N A Nikulin, P V Avlasko, D V Volkov, E A Stepanova, D D Krivova, A A Bisov, R M Nikitin D E Alfimov	Siberian Federal University, Krasnoyarsk, Russia, Krasnoyarsk State Agrarian University, Krasnoyarsk, Russia
Transport system organization of an Industry 4.0 cyber and physical production company	D A Zakoldaev, A V Shukalov, I O Zharinov O O Zharinov	Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint Petersburg, Russia Department of Problem-Oriented Computing Complexes, Saint Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia

SECTION 4. DATA PROTECTION IN AUTOMATION SYSTEMS

A method for the autonomous control of navigation information integrity	I N Kartsan, M O Petrosian, S V Efremova, V V Brezitskaia	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Adaptive encoding in remote digital telemetry and command systems	A G Samoylov, S A Samoylov, V S Samoylov A P Galkin	Vladimir State University named after Alexandr and Nikolay Stoletovs, Vladimir, Russia
Adaptive visible image watermarking based on Hadamard transform	Margarita Favorskaya, Eugenia Savchina Aleksei Popov	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
An approach for automating the design of convolutional neural networks	Dmitry Plotnikov, Evgenii Sopov Ilya Panfilov	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Application of informative patterns in the classifier for a logical data analysis method development	R I Kuzmich, A A Stupina, M V Karaseva, L N Ridel T V Dubrovskaya	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Approach for determination of cyber-attack goals based on the ontology of security metrics	Elena Doynikova Igor Kotenko	St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences, St. Petersburg, Russia
Comprehensive approach for solving multimodal data analysis problems based on integration of evolutionary, neural and deep neural network algorithms	Ilya Ivanov, Evgenii Sopov a Ilya Panfilov	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia

Coverage verification by tests of program branches and conditions of software in environments of automatic testing	A H Li, I A Lyapunova N A Fomenko	Southern Federal University, Rostov-on-Don, Russian Federation Gubkin Russian State University of Oil and Gas, Moscow, Russian Federation
Formation of optimal composition of the modules of single-function multiversion software for automated control system of the satellite communication system	V I Kudymov, V. V. Brezitskaya, P. V. Zelenkov, I. N. Kartsan Yu. N. Malanina	JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia Management Department, Irkutsk State Transport University, Irkutsk, Russia
Increasing of organizational and technical system reliability with a help of differential approach	A A Sidaras S V Chentsov	Siberian Federal University, Krasnoyarsk, Russia
Integration of hardware and software tools for VLSI SoC class design support	O V Drozd, P A Russkikh, S V Chentsov D V Kapulin	Siberian Federal University, Krasnoyarsk, Russia
Methods of beam forming adaptive digital array and their study using a computer model	D D Dmitriev, A V Sokolovskii, I N Kartsan, V N Tyapkin, S V Efremova	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Non-replicable object surface development for its automatic identification	L S Beckel V D Shkilev	Kaluga branch Bauman Moscow State Technical University, Kaluga, Russia
Optimization of automatic exclusion algorithm of the vector network analyzer measuring equipment	D A Bolshakov, N N Burdukovskaya K V Shugurova	JSC "Academician M F Reshetnev Information satellite systems", 52 Lenin street, Zheleznogorsk, Krasnoyarsk region, 662972, Russia
Optimization of two-alternative batch data processing	A V Kolnogorov	Yaroslav-the-Wise Novgorod State University, Velikiy Novgorod, Russia
Risk management of interactive electronic technical manual design projects	Artemy Varzhapetyan, Valeriy Lipatnikov, Sergey Michurin Elena Frolova	St. Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia, Marshall of the Soviet Union S.M. Budenny Military academy of communication, Saint Petersburg, Russia
Salient region detection in the task of visual question answering	Margarita Favorskaya, Vladimir Andreev Aleksei Popov	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Simulation modelling of the heterogeneous distributed information processing systems	G A Ontuzheva, E R Bruchanova, I N Rudov, N O Pikov O A Antamoshkin	Siberian Federal University, Krasnoyarsk, Russia

SECTION 5. ECOLOGY AND ECOLOGICAL ENGINEERING

A new approach to multiversion decision-making to improve the reliability of environmental monitoring parameters	M.V. Saramud, I.V. Kovalev, V.V. Losev, A S Kuznetsov, D I Kovalev S S Ognerubov	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia SDE II, Microsoft, Snoqualmie, Washington, USA
Combined production of ammonia and methanol as the way to deal with the greenhouse gas	S V Afanasiev, M V Kravtsova, Yu N Shevchenko T P Guschina	Togliatti State University, Togliatti, Russia
Component selection model of the indoor automated system on the basis of system analysis	S A Ivanov I J Kvyatkovskaya	Saint Petersburg University of Management Technologies and Economics, Saint Petersburg, Russia Astrakhan State Technical University, Astrakhan, Russia
Converting gaseous pollutants toxic to plants and humans into environmentally friendly compounds in artificial ecosystems	A A Tikhomirov, S A Ushakova, N A Tikhomirova, S V Trifonov G S Kalacheva	Institute of Biophysics SB RAS, Federal Research Center "Krasnoyarsk Science Center SB RAS", Krasnoyarsk Russia
Selection of emission detection ranges for the laser method of plant stress revealing at a fluorescence excitation wavelength of 355 nm	Ju V Fedotov, M L Belov, D A Kravtsov, A A Cherpakov V A Gorodnichev	Bauman Moscow State Technical University (BMSTU), Moscow, Russia
Development and creation a model of a digital twin of the cubepart rectification installation for the separation of a binary water-alcohol mixture	R A Khakimov N S Shcherbo	Omsk state technical university, Omsk, Russia
Development of low-waste technology for the processing of sulphur into polysulphides and materials based on them	A A Jusupova, R T Akhmetova, L R Baraeva, G A Medvedeva Zh V Mezhevich	Kazan national research technical university, Kazan, Russia
Elaborating of the device for the importation of liquid ameliorants into the soil	S A Vasilyev, I I Maximov, A A Vasilyev E AVasilyeva	Nizhny Novgorod state engineering and economic university, Knyaginino, Nizhny Novgorod Region, Russia, Chuvash state agricultural academy, Cheboksary, Russia
Environmental management modelling in the areas of waste landfilling	T G Sereda S N Kostarev	Perm State Agro-Technological University named after academician D N Prianishnikov, Perm, Russia Perm Military Institute of National Guard Troops of the Russia Perm, Russia Russian Presidential Academy of National Economy and Public Administration. Perm branch, Perm, Russia National Research Perm Polytechnic University, Perm, Russia

Geoinformation modelling system of natural technical complexes for simulation modelling and optimization of load distribution	Natalia Zhilnikova	St. Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia
Investigation of seed uniformity under field and laboratory conditions	E P Alekseev, S A Vasiliev I I Maksimov	Chuvash State Agricultural Academy, Cheboksary, Russia
Measurement accuracy of real time parameters in environmental monitoring	M.V. Saramud, I.V. Kovalev, D I Kovalev, A.A. Voroshilova, A.S. Kuztensov	Siberian federal university, Krasnoyarsk, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations, Krasnoyarsk, Russia
Microclimate Control System Development	S N Kostarev T G Sereda	Perm State Agro-Technological University named after academician D N Prianishnikov, Perm, Russia, 2 Perm Military Institute of National Guard Troops of the Russian Federation, Perm, Russia Russian Presidential Academy of National Economy and Public Administration. Perm branch, Perm, Russia Perm Institute of the FPS of Russia, Perm, Russia
Numerical modelling of surge wave in downstreams of the waterworks	J G Ivanchenko, A A Tkachev, K G Gurin D J Ivanenko	Novocherkassk engineering-ameliorative institute named after A. K. Kortunov of Don State agrarian university, Novocherkassk, Rostov region, Russia
Optimization of carbon dioxide compressing technology in the production of urea	S V Afanasiev, M V Kravtsova, Yu N Shevchenko, T P Guschina S A Sokov	Togliatti State University, Togliatti, Russia
Optimization of recycling strategy for solid industrial waste	A V Rubinskaya, E I Pister, A A Ioffe, A Yu Vititnev M V Karaseva	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia
Developing the technology of physicochemical processing of organic waste in closed life support systems for space applications	A A Tikhomirov, S V Trifonov E A Morozov	Institute of Biophysics SB RAS, Federal Research Center "Krasnoyarsk Science Center SB RAS", Krasnoyarsk Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk Russia
System for personnel training in decision making of wildfires fighting	G Dorrer, A Dorrer, I Buslov, S Yarovoy	Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia

SECTION 6. POWER ENGINEERING

Automation and control of blow molding mechanisms according to the criterion of maximum energy efficiency	V V Platonov, A T Tsirkunenko S S Bukhanov	RiK-Energo lld, Ekaterinburg, Russian Federation
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Automation of the design and development stages of semiconductor devices	A A Imanova, V V Fediakov E Tulegenov	Gmbh Anvilex, Dresden, Deutschland ANO CPE MOMENTUM, Moscow, Russian Federation
Control of high-voltage pump motor using a frequency sine-wave filter converter	E Dresvianskii, M Pokushko, A Stupina, V Pantelev V Yurdanova	Siberian Federal University, Krasnoyarsk, Russia
Determination of the amount of entropy of non-recoverable elements of the technical system	Aleksander Dulesov, Denis Karandeev, Natalia Dulesova	Katanov Khakass State University, Abakan, Russia Khakas Technical Institute of Siberian Federal University, Abakan, Russia
Doubly fed induction motors control in positional electrical drives	P V Avlasko, S A Bronov, Z A Avlasko D A Antonenko	Siberian Federal University, Krasnoyarsk, Russia
Experimental study on the structure formation features of a filler of catalytic heating systems	A A Medyakov, A D Kamenskih, D M Lastochkin A P Ostashenkov	Volga State University of Technology, Yoshkar-Ola, Mari El Republic, Russian Federation
High-performance flux-switching DC motors for energy facilities	A D Golykov, S P Gladyshev A N Gorozhankin	Michigan-Dearborn University, Detroit, United States South Ural State University, Chelyabinsk, Russia
Improving the reliability of the relay automation system for power facilities	S S Bukhanov, L A Zhuravleva M N Kornienko	RiK-Energo Ltd, Chelyabinsk, Russia Gmbh Anvilex, Dresden, Deutschland
Increase of energy efficiency of energy generation due to utilization of waste heat on district heating systems	D Karabarin S Mihailenko	Siberian Federal University, Krasnoyarsk, Russia
The research of the electric field intensity change in the air gap of the compact electrostatic filter	F R Ismagilov, I Kh Khairullin, M V Okhotnikov, A A Nusenkis D V Maksudov	Ufa State Aviation Technical University» (USATU), Ufa, Russia «KURS», Ltd
Optimization model of power supply system of industrial enterprise	V Pantelev, S Zilberman, G Pilyugin, R Petukhov, E Sizganova M Mashukov	Siberian Federal University, Krasnoyarsk, Russia
Power forecasting for a photovoltaic system based on the multi-agent adaptive fuzzy neuronet	A S Degtyarev, V I Kosenko, E A Engel, N N Engel, M V Saveleva	JSC "Central Construction Bureau "Geofizika", Krasnoyarsk, Russia JSC "Academician M F Reshetnev Information satellite systems", Zheleznogorsk, Krasnoyarsk region, Russia Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia Katanov Khakass State University, Abakan, Russia
Increasing the efficiency of energy generation at Krasnoyarsk CHP-2 by utilization of waste heat	D Karabarin S Mihailenko	Siberian Federal University, Krasnoyarsk, Russia

Prediction of improper operation of microprocessor relay protection devices during geomagnetic storms	E V Platonova, V I Pantelev, G N Chistyakov, A V Mainagashev V P Kochetkov	Khakassky technical institute - Branch of Siberian federal university, Abakan, Russia Siberian federal university, Krasnoyarsk, Russia
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